historic interest, but that they give important evidence relating to the structure and mobility of the earth. The spirit of maritime adventure born in the Scandinavian fiords gave the European races the mastery of the sea and a political predominance which is world-wide in its influence. The geological study of fiords leads to geographical problems that are also world-wide in their range, for the view that fiords are due to local superficial agents chiselling out furrows on an impassive earth explains neither their features nor distribution. Fiords teach more significant and far-reaching lessons; they point to deep-seated forces which affect the earth as a whole. However greatly fiords may have been moulded by ice, wind, and water, they are not primarily due to those agencies, which have used the fiords, not made them.

The ultimate cause of fiords is the rupture of certain wide areas of the earth by the pulsation of the crust under the play of titanic forces set at work by the great Miocene disturbances which upheaved the chief existing mountain systems of the world.

SOCIETIES AND ACADEMIES.

LONDON.

Mathematical Society, April 11.—Dr. H. F. Baker, president, and temporarily Prof. A. E. H. Love, vice-president, in the chair.—A. **Cunningham**: Mersenne's numbers.—G. N. **Watson**: A modification of Liouville's theorem.—G. H. **Hardy** and J. E. **Littlewood**: Contributions to the arithmetic theory of series.—G. B. **Mathews**: Complex binary arithmetic forms.—H. S. **Carslaw**: An application of the theory of integral equations to the equation $\nabla^2 u + k^2 u = 0$.—H. F. **Baker**: (i) Some transformations of Kummer's surface; (ii) the curves which lie on a cubic surface.

PARIS.

Academy of Sciences, April 9.—M. F. Guyon in the chair.—E. H. **Amagat**: The variations of the pressure coefficient with temperature and on some points which depend on it in the study of the internal pressure of fluids. The pressure coefficients of argon are calculated from experimental data obtained in the laboratory of Prof. Kamerlingh Onnes for temperature ranges, −121·2° to −109·9°, −102·5° to −57·7°, −57·7° to 0·0°, and 0·0° to +20·4°; for hydrogen at temperatures −217·4° to −182·8°, −182·8° to −103·6°, −103·6° to 0·0°, and 0·0° to 100·2°; for helium, at temperatures −258·9° to −182·8°, −182·8° to −103·6°, −103·6° to 0·0°, and 0·0° to 100·3°. All the results point to a small diminution of the pressure coefficient as the temperature increases. The changes observed are much larger than would be expected from the values of the specific heat at constant volume.—E. L. **Bouvier**: The classification of the genus Caridina and the extraordinary variations of a species of this genus, *Caridina brevirostris*. The variations of this species have led the author to reject the existing classification of the Caridinæ based on the rostral structure; suggestions for a new scheme are put forward.—Paul **Sabatier** and M. **Murat**: The direct addition of hydrogen by catalysis to the benzoic esters: the preparation of the hexahydrobenzoic esters. The addition of hydrogen to methyl and ethyl benzoates by the catalytic action of reduced nickel requires the temperature of the reaction to be maintained exactly at 180° C. Good yields of ethyl and methyl hexahydrobenzoates are thus obtained.—Kyrille **Popoff**: The influence of the various methods of photometric measurements on the estimation of stellar magnitudes.—Ch. **Jordan** and R. **Fiedler**: Contribution to the geometry of convex curves and of certain curves which are derived from them.—A. **Cotton** and H. **Mouton**: New substances showing magnetic double refraction. The straight chain carbon-compounds and some of their derivatives remain inactive in a strong magnetic field. Substituted paraffins, however, containing the nitro-group or a halogen exhibit magnetic double refraction.—Albert **Colson**: The singular features of certain proofs in physical chemistry. A reply to a recent note of M. Langevin, dealing especially with the van't Hoff theory of solution.—Ed. **Griffon** and A. **Maublanc**: The microsphœra of the oak.—Paul **Macquaire**: Two combinations formed by iodine and the tyrosine obtained by the trypsic hydrolysis of albuminoid materials. Analyses are given of a definite diiodo-derivative of tyrosine; by the action of boiling water on this substance a new iodine derivative of tyrosine was obtained containing less iodine.—A. **Desgrez** and Mlle. Bl. **Guende**: The influence of an excess of sodium chloride on nutrition and on renal elimination. An excess of common salt in food favours auto-intoxication.—Gabriel **Bertrand** and F. **Medigreceanu**: The normal manganese in the blood. Traces of manganese were found in blood from the sheep and the horse; negative results were obtained with blood from man, rabbit, chicken, and duck. The amount of manganese present in the blood of man and the higher animals is much less than has hitherto been supposed.—Ed. **Bourquelot** and M. **Bridel**: The action of emulsion upon salicin in alcoholic solution. Salicin is hydrolysed by emulsion in solutions containing proportions of alcohol up to 90 per cent. In aqueous solution the hydrolysis is not complete, about 5 per cent. of the salicin remaining unchanged.

BOOKS RECEIVED.

Notes and Answers to Exercises in "A Shorter Geometry." By C. Godfrey and A. W. Siddons. Pp. 16. (Cambridge: University Press.) 6*d*.

Note sur le Vol des Oiseaux. By E. Delsol. Pp. iv+23. (Paris: Gauthier-Villars.) 1 franc.

The Cause of Cancer. Being Part iii. of "Protozoa and Disease." By J. J. Clarke. Pp. xi+112+viii plates. (London: Baillière, Tindall and Cox.) 7*s*. 6*d*. net.

Mikroskopisches Praktikum für systematische Botanik. (I., Angiospermae.) By Prof. M. Möbius. Pp. viii+216. (Berlin: Gebrüder Borntraeger.) 6.80 marks.

Anleitung zur mikroskopischen Untersuchungen von Pflanzenfasern. By Dr. G. Tobler-Wolff and Prof. F. Tobler. Pp. viii+141. (Berlin: Gebrüder Borntraeger.) 3.50 marks.

Handbuch der vergleichenden Physiologie. Edited by H. Winterstein. 20 Lief. Band iv. (Jena: G. Fischer.) 5 marks.

British Association for the Advancement of Science. Portsmouth Meeting, 1911—A Catalogue of Destructive Earthquakes, A.D. 7 to A.D. 1899. By Dr. J. Milne. Pp. 92. (London: The British Association.) 5*s*.

The Mafulu Mountain People of British New Guinea. By R. W. Williamson. Pp. xxiii+364+plates. (London: Macmillan and Co., Ltd.) 14*s*. net.

Oxford Gardens. Based upon Daubeny's Popular Guide to the Physick Garden of Oxford: with Notes on the Gardens of the Colleges and on the University Park. By R. T. Günther. Pp. xv+280. (Oxford: Parker and Son; London: Simpkin, Marshall and Co., Ltd.) 6*s*. net.

Handbook of the Technique of the Teat and Capillary Glass Tube, and its Applications in Medicine and Bacteriology. By Sir A. E. Wright. Pp. xvi+202. (London: Constable and Co., Ltd.) 10*s*. 6*d*. net.

On the Backwaters of the Nile. Studies of some

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Child Races of Central Africa. By the Rev. A. L. Kitching. Pp. xxiv+295. (London: T. Fisher Unwin.) 12*s*. 6*d*. net.

The Land of Goshen and the Exodus. By Sir H. Brown. Second edition. Pp. 92+2 maps. (London: E. Stanford.) 3*s*. net.

Mineralien-Sammlungen. Ein Hand- und Hilfsbuch für Anlage und Instandhaltung mineralogischer Sammlungen. By Dr. W. Brendler. ii. Teil. Pp. viii+700. (Leipzig: W. Engelmann.) 20 marks.

Hevea Brasiliensis, or Para Rubber. By H. Wright. Fourth edition. Pp. xx+542. (London: Maclaren and Sons, Ltd.) 15*s*. net.

The Fishes of the Indo-Australian Archipelago. I. Index of the Ichthyological Papers of P. Bleeker. By Drs. M. Weber and L. F. de Beaufort. Pp. xi+410. (Leiden: E. J. Brill, Ltd.)

Einführung in die Tier- und Menschenkunde. By Prof. O. Schmeil. Pp. x+260. (Leipzig: Quelle & Meyer.) 2.50 marks.

Lebensfragen aus der heimischen Pflanzenwelt. By Dr. G. Worgitzky. Pp. viii+295. (Leipzig: Quelle & Meyer.) 7.20 marks.

Mitteilungen des Ferdinand von Richthofen-Tages, 1911. Pp. vi+78. (Leipzig and Berlin: B. G. Teubner.)

Feuerungsanlagen und Dampftessel. By J. E. Maner. Pp. vii+147. (Leipzig and Berlin: B. G. Teubner.) 1.25 marks.

Die Geschlechtskrankheiten, &c. By Prof. Schumburg. Zweite Auflage. Pp. vi+112. (Leipzig and Berlin: B. G. Teubner.) 1.25 marks.

Australien und Neuseeland: Land, Leute und Wirtschaft. By Dr. R. Schachner. Pp. vii+120. (Leipzig and Berlin: B. G. Teubner.) 1.25 marks.

Naturwissenschaften und Mathematik im classischen Altertum. By J. L. Heiberg. Pp. 102. (Leipzig and Berlin: B. G. Teubner.) 1.25 marks.

Physical Geography for South African Schools. By A. L. Du Toit. Pp. xii+250. (Cambridge: University Press.) 4*s*. 6*d*. net.

DIARY OF SOCIETIES.

THURSDAY, APRIL 18.

ROYAL INSTITUTION, at 3.—Synthetic Ammonia and Nitric Acid from the Atmosphere: Prof. A. W. Crossley, F.R.S.

LINNEAN SOCIETY, at 8.—*Botrychioxylon paradoxum*, a Palæozoic fern with secondary wood: Dr. D. H. Scott, F.R.S.—On *Psygmophyllum majus*, sp. nova, from the Lower Carboniferous rocks of Newfoundland, together with a revision of the genus, and remarks on its affinities: Dr. E. A. Newell Arber.—The Alpine Flora of the Canadian Rocky Mountains: Mrs. Henshaw.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—*Adjourned Discussion:* The Causes Preventing the More General Use of Electricity for Domestic Purposes.

INSTITUTION OF MINING AND METALLURGY, at 8.—Notes on the Valuation of Ores and Minerals and on Metallurgical Calculations: G. T. Holloway.—The Domes of Nova Scotia: T. A. Rickard.—Gels in Relation to Ore Deposition: E. Hatschek and A. L. Simon.—Recent Practice in Diamond Drilling and Borehole Surveying: J. I. Hoffmann.

FRIDAY, APRIL 19.

ROYAL INSTITUTION, at 9.—Electricity Supply: Past, Present, and Future: A. A. Campbell Swinton.

INSTITUTION OF MECHANICAL ENGINEERS, at 8.—Tenth Report to the Alloys Research Committee on the Alloys of Aluminium and Zinc: Dr. W. Rosenhain and S. L. Archbutt.

INSTITUTION OF CIVIL ENGINEERS, at 9.—"James Forrest" Lecture: Aerial Flight: A. Mallock, F.R.S.

MONDAY, APRIL 22.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.

TUESDAY, APRIL 23.

FARADAY SOCIETY, at 8.—Discussion on Magnetic Properties of Alloys, preceded by the following Papers: On the Magnetic Properties of Iron-carbon and Iron-silicon Alloys: Dr E. Gumlich.—The Dependence of Magnetisation on Composition in Chemical Compounds: Prof E. Wedekind.—The Magnetic Properties of a Variety of Special Steels at Low Temperatures, and The Heusler Alloys: Dr. Alexander D. Ross and Dr. J. G. Gray.—(1) The Magnetic Properties of Nickel and Manganese Steels with Reference to their Metallographical Composition; (2) The Magnetic Properties of the Compounds of Manganese with Phosphorous, Arsenic, Antimony, and Bismuth: Dr. S. Hilpert and Dr. E. Colver-Glauert.—The Nature of the Heusler Alloys: The Physical Aspect: Dr. E. Take.—The Chemical Aspect: Dr. F. Heusler.—Variation of Ferromagnetic Properties of the Heusler Alloys with Composition and Heat Treatment: Prof. A. A. Knowlton.—The Relations between the Mechanical Hardness and the Retentivity and Permeability of Ferro-Alloys: Prof. C. F. Burgess and J. Aston.—The Magnetic Properties of the Iron-nickel, Iron-cobalt, and Nickel-cobalt Alloys: Prof. Pierre Weiss.

ROYAL STATISTICAL SOCIETY, at 5.—On the Methods of Measuring Association between Two Attributes: G. Udny Yule.

ROYAL ANTHROPOLOGICAL INSTITUTE, at 8.15.—Pre-Boulder Clay Man: Mr. Moir and Prof. A. Keith.

ZOOLOGICAL SOCIETY, at 8.30—A First Account of the Courtship of the Redshank (*Totanus calidris*): Julian S. Huxley.—Amphipoda from Bremerhaven: Mrs. E. W. Sexton.—Descriptions of New Fishes of the Family Loricariidæ in the British Museum Collection: C. Tate Regan.—The Circulatory System of the Common Grass Snake (*Tropidonotus natrix*): C. H. O'Donoghue.

INSTITUTION OF CIVIL ENGINEERS, at 8.—*Further Discussion:* The Remodelling and Equipment of Madras Harbour: Hon. Sir Francis J. E. Spring, K.C.I.E.—The Alteration in the Form of Madras Harbour: H. H. G. Mitchell.

WEDNESDAY, APRIL 24.

ROYAL SOCIETY OF ARTS, at 8.—Technical Education in Ireland: George Fletcher.

THURSDAY, APRIL 25.

ROYAL SOCIETY, at 4.30.—*Probable Papers:* The Diffusion and Mobility of Ions in a Magnetic Field: Prof. J. S. Townsend, F.R.S.—On the Observed Variations in the Temperature Coefficients of a Precision Balance: J. J. Manley.—On the Torque produced by a Beam of Light in Oblique Refraction through a Glass Plate: Dr. Guy Barlow.—Contributions to the Study of Flicker. III: Dr. T. C. Porter.

ROYAL INSTITUTION, at 3.—Synthetic Ammonia and Nitric Acid from the Atmosphere: Prof. A. W. Crossley, F.R.S.

ROYAL SOCIETY OF ARTS, at 4.30.—The Central Provinces: Sir John O. Miller, K.C.S.I.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Third Kelvin Lecture: Prof. H. du Bois.

CONCRETE INSTITUTE, at 8.—Discussion on reports presented by the Tests Standing Committee, entitled (1) The Testing of Concrete, Reinforced Concrete, and Materials Employed therein; (2) The Testing of Reinforced Concrete Structures on Completion.

FRIDAY, APRIL 26.

ROYAL INSTITUTION, at 9.—Sir William Herschel: Sir George Darwin, K.C.B., F.R.S.

PHYSICAL SOCIETY, at 5.—*Adjourned Discussion:* The Coefficients of Expansion of Fused Silica and Mercury: H. Donaldson.—The Solution of Net-work Problems by Determinants: R. Appleyard.—A Method of Measuring Small Inductances: S. Butterworth.

INSTITUTION OF CIVIL ENGINEERS, at 8.—The Principles and Practice of Accountancy in Relation to Engineering Design and Work: T. Frame Thomson.

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